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ABSTRACT

This literature review on learning disabilities contains information on diagnosis, teacher qualifications and training, the learning environment, curriculum, perception, and integration as well as an annotated bibliography of approximately 80 items. Following the review of research and opinion in each section are questions which are thought to remain unanswered such as whether informal procedures can replace formal testing in diagnosis and what educational side effects result from drug or megavitamin therapy. Also included are the comments of four consultants in such areas of research as whether a relationship exist between perception and reading disability; and a reaction to a handbook on special education published by the Protestant School Board of Greater Montreal. It is concluded that the most pervasive question concerns the value of general approaches to learning and the need for teachers to be able to individualize learning. The bibliography is alphabetical by author and also includes title, publisher, date, and a brief description (Sometimes evaluative). (DB)

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REPORTS IN EDUCATION

Number 3

LEARNING DISABILITIES

Review of the Literature

and

Selected Annotated Bibliography

Prepared by

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REPORTS IN EDUCATION

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Table of Contents

I	Opening	4
II	Definition	5
III	Diagnosis (a) Questions	8
IV	Teacher Qualifications and Training (a) Questions	13
V	Structuring the Learning Environment (a) Questions	16
VI	Notes on Specific Areas of Curriculum (a) Numerical Problems (b) Reading Problems (c) Questions	23
VII	Perceptual Problems (a) Questions	25
VIII	Integration versus Segregation (a) Segregation (b) Questions (c) Integration (d) Questions	29
IX	Comments from Consultants	36
X	Brief Reaction to the "Handbook on Special Education, A Description of Services Available for Exceptional Children" (from the Protestant School Board of Greater Montreal)	40
XI	Conclusion	41
XII	Bibliography	42

I Opening

The area of learning disabilities is very broad. It is impossible to survey it all at once. This paper is concerned with studying various research that has been done in the last five to seven years. By reviewing the literature in a very general sense it is hoped to give the reader an idea of what is known concerning the field of learning disabilities and thus be able to pose further questions for research.

As learning disabilities is a relatively new field there are many unanswered problems. Hallahan & Cruikshank (1973) sum it up when they say, "Practically every aspect of the total problem from epidemiology and demography to teacher preparation and teaching materials needs in depth study and research (p. 261)."

In this paper, certain specific areas have been examined regarding learning disabilities and though they have been discussed separately, there is still much overlap amongst them. It is important to note that most of the research has not been conclusive, for a variety of reasons. These include:

(a) "finding enough children with similar patterns of disability" (J. Dunsing 1973);

(b) "definition presents problem because there is not just one definition;

(c) selection factors in samples;

(d) establishing rules based on heterogeneous groups;

(e) selection of proper use of criteria;

(f) relationship of criterion to experiment;

(g) teacher influence;

(h) importance of publication policies;

(i) application of results;

(j) problem of vested interests"

(Silberberg & Silberberg, 1969).

The very size of the area that is surveyed in this report, as well as the highly specialized nature of much of the research conducted within it, make it very difficult to present a fully integrated picture. Our goal is to present a survey of the state of current thought and research (where it exists) in learning disabilities in a manner which can be used as a jumping-off point for further work. It is not intended to produce a handbook or practitioner's manual but rather to suggest some directions in which further work could be profitably undertaken.

The question of learning disabilities can be considered from several different perspectives. Each of these foci allows the asking of different types of questions. They are related, and overlap is unavoidable. The perspectives we will use in this report include the traditional one of formal definition, and also more specific and functional ones, such as the diagnosis of learning disabilities, the preparation of teachers, major methodological approaches (structuring the learning environment) in the teaching of the learning disabled, and the question of integration of learning disabled and "normal" children. A large area not so used in this report is materials used in learning disability programs.

Another promising area which is not reviewed is the involvement of parents in their children's educational program. Several parent-training programs exist, usually for children with behavioral problems (e.g., at the Montreal Children's Hospital), and the suitability of these techniques for learning disabled children might be worthy of future study.

II Definition

It is important to understand what is meant by the term learning disability. Yet there is not one precise definition which is acceptable to all. Many definitions have been devised by such people as Strauss, Gluk (1962), Lehiten (1947), Bateman (1965), but there seem to be certain flaws in each one.

In 1966 a task force was set up by the U.S. Dept. of Health, Education and Welfare and the National Society for Crippled Children and Adults to define the term minimal brain dysfunction. Headed by Samuel D. Clements the project defined this term as, "children of near average, average or above average general intelligence with certain learning or behavioral disabilities ranging from mild to severe which are associated with deviations of function of the central nervous system. These deviations may manifest themselves by various combinations of impairment in perception, conceptualization language, memory and control of attention impulse or motor function. . . . Similar symptoms may or may not complicate the problems of children with cerebral palsy, epilepsy, mental retardation, blindness or deafness (pp. 9-10)."

This same definition is often applied to the term "learning disabilities."

This definition had been accepted by a number of people in the field, but since 1966, Lloyd Dunn (1973), in his second edition of Exceptional Children in the Schools, discusses this definition and prior ones explaining the restrictions of each. This new definition, he feels, is more specific and encompasses children with severe learning disorders who were traditionally assumed by physicians and psychologists to have neurologinal dysfunctions. The definition is as follows:

"Children with major specific learning disabilities (MSLDs) are those 1.0 to 2,0% of the school population (1) who display one primary severe or moderately severe disculpancy between capacity and performance in a specific basis learning process involving perception, conception or expression associated with the areas of oral and written language or mathematics, (2) yet whose MSLDs are neither mental retardation nor any of the other traditional handicapping conditions, (3) but who may have one or more additional secondary traditional handicapping conditions, (4) but who may have one or more additional secondary traditional or specific learning disabilities to a milder degree, (5) none of

whom have MSLDs that can be adequately treated in the regular school program when only remedial education is provided in an ancellary service, (6) not more than one half of whom have MSLD's that can adequately be treated in the regular school program even when special education consultant-helping teacher services are extensively provided, (7) half or more of whom therefore will require more intensive special education instruction under such administrative plans as the resource room, the combined resource room and special class, the special class and the special day and boarding school and, (8) yet any of whom may also require other remedial and special education services to deal with their secondary traditional or specific learning disabilities (pp. 542-543)."

According to Dunn, this definition has a low prevalence figure. It attempts to restrict the field by excluding those cases which can be handled by remedial education and which should not be classified as MSLD. In the future this definition may need to be altered mainly because remedial education (which includes reading disability) and special education may become interwoven, and if so, then the 1.0 to 2.0% prevalence would become much larger.

Dunn's definition is very specific, and focusses on a set of extreme cases.* The need for a more widely acceptable definition remains.

For purposes of this paper, a definition of the term learning disabilities, which is closer to Clements's is accepted. The children we are speaking about are those who have average or above average intelligence but are not performing at this level. Though the physically handicapped, emotionally disturbed and mentally retarded are not mentioned specifically, much of what is discussed could also be applied to them.

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* For example, aphasia (severe inability to understand receptive and/or to recall needed expressive oral language), dyslexia (severe reading disorder), visual perceptual disability including visual agnosia (disorder of identification, organization, or interpretation of visual stimuli).

We are basically discussing the "normal" child in primary grades, who exhibits specific learning problems.

III Diagnosis

Children who are considered learning disabled are usually given a battery of tests to decide in which areas the child has problems. The test would indicate a problem area, for example visual motor, and then remediation would follow. In the past, it was considered important to know the etiology of a problem but research has shown that it is not necessary to know the cause unless it is medical or physiological, in which case medication would be given. Diagnosticians are moving away from trying to find out why the child has a problem but instead concentrate on seeing what the behaviors are now and dealing with these. Cohen (1970) believes in intensive instruction using the behaviors presented.

Guilford (1971) states that "the need for tests which assess specific functions rather than global intelligence has been strongly felt for a long time (p.35)." In this way the teacher would know exactly where the child's weakness was and thus could provide appropriate instruction.

Studies have been carried out to determine which tests are valid or not. The most important conclusion found in all of the research is that the earlier the diagnosis the better the chances of applying appropriate instruction and either avoiding learning disabilities entirely or achieving successful remediation. This clearly implies that learning disabilities are to some extent "teaching disabilities," students not adequately learning how to learn, as well as using inappropriate teaching methods .

Perinden, Jacobson & Linden (1970) did a study on whether a child who would be learning disabled could be diagnosed in kindergarten. Teachers selected children who they felt were below the reading readiness level and a battery of tests was given by the school psychologist and two learning disability specialists. The tests given were the Wide Range Achievement Test, Evanston

Early Identification Scale, Bender Gestalt Visual Motor Test, and Metropolitan Reading Readiness Test Form R. The Bender Gestalt was not found to be a good predictor of first grade reading. The result of this study was that the kindergarten teacher was 80% correct in her selection of the children. It was concluded that if the kindergarten teacher learned how to give the Wide Range Achievement Test and the Evanston Early Identification Scale she could then be 90% effective in selecting the learning disabled child and it would free the academic team. One question which remains unanswered is whether the additional trouble of formal testing to raise the teacher's accuracy from 80 to 90 per cent is worthwhile.

Eaves, Kendall and Crechton (1972) did a study using a battery of tests to avoid emotional and learning difficulties in children with minimal brain dysfunction. Twelve kindergarten classes in Vancouver, B.C., were tested by using de Hersh's Predictive Index consisting of 10 tests, the Draw-a-Person Test, and Name Printing. De Hersh's tests include (a) Pencil Test, (b) Bender Visuo Motor Gestalt Test, (c) Wepman Auditory Discrimination, (d) Number of Words Used in a Story, (e) Categories, (f) Haust Reversals Test, (g) Gates Word Matching Subtests, (h) Word Recognition I, (i) Word Recognition II, and (j) Word Reproduction Index. The results are stated as follows. "The Modified Prescription Index (MPI) is confirmed as a relatively quick, easily administered measure that yields valuable predictive information about otherwise normal children. It is suggested that the MPI should be given in the second half of kindergarten and preferably after children reach the age of 5-and-a-half, and could be given by a remedial teacher or kindergarten teacher after being trained by a psychologist.

Dunn (1973) states that "an emerging trend is toward diagnosis and prevention in the preschool years with the main concerns being oral, language, auditory and visual perception (p. 586)."

Task Force II in 1969 states that identification of learning problems in preschool is difficult because "(1) there has yet been no opportunity for school learning problems to occur, (2) psychological tests at the early ages are generally less reliable than at older ages, (3) while few educational-psychological institutions have yet established screening programs which reach large numbers of preschoolers these children are however been by medical personnel (p.5)."

Koppitz (1971), in his five year follow up of children with learning disabilities, devised a screening procedure for selection of children prior to kindergarten. The screening would consist of an experienced social worker who would observe the youngsters during freeplay, a school psychologist who would give the Vane Kindergarten Test, and a school social worker and/or nurse would interview the mothers to obtain social history of the children. Vision and hearing tests would also be administered. A child would be ready for kindergarten if he could meet at least three of the four criteria listed below:

1) The pupil's social and emotional behavior, as observed by the kindergarten teacher must be at least at the four-and-one-half year old level. The youngster should be able to feed and dress himself and to take care of his toilet needs.

2) The pupil's language ability, perceptual motor function, mental age and emotional adjustment as measured on the Vane Kindergarten Test should be at least at the four-and-one-half year old level.

3) The pupil's chronological age at the time of school entry (September) should be at least five (i.e., his birthday should be between January and August).

4) The pupil's social history should reveal no marked developmental abnormalities or delays nor any serious accidents, illnesses, or traumatic experiences that might contribute to or result in learning disabilities or emotional problems.

Those children who would not be ready for the regular kindergarten would be in a special immature class which would progress at a slower

rate. These classes would cover kindergarten and first grade within a three year period of time.

It has not been empirically shown that this is the best method for screening before kindergarten. Considerable work remains to be done in the validation of screening procedures.

In deciding what should be included in a diagnosis, Waugh, Bush and Kephart (1971) recommend four areas to be tested in the preschool child. These include (1) intelligence, (2) achievement, (3) development and communication and (4) social maturity. "A minimum battery for the elementary, junior high, and high school groups should include (1) intelligence, (2) achievement, (3) development and/or communication (according to age group) and (4) specific visual and auditory tests (p.25)."

Norman Buktenica (1971) discusses various types of screening procedures and advocates group screening "in order to (1) predict children who are a high risk for learning problems, (2) describe each child's learning characteristics, (3) produce the information necessary for devising intervention (instruction) programs aimed at prevention of learning disabilities (p.380)."

The best method of diagnosis would seem to be one which is done early to specifically describe what the problem is. Then the appropriate method of instruction would be applied so as to prevent learning disabilities.

IQ had been an important factor in deciding what a child potential is, yet Silberberg and Silberberg (1969) found that in the upper elementary and secondary level this can be a poor indication, mainly since these tests are usually based on reading and the child may be deficient in this skill. In the primary grades, IQ tests are usually concerned with visual motor and visual perception co-ordination, but yet it has been demonstrated that these skills do not necessarily predict how a child will function in the area of reading.

A teacher must be careful about how much importance he places on the value of measurements.

The tendency in diagnosing learning disabilities has lately moved more towards the area of task or behavior analysis, that is, observing the behavior and arranging sequential steps to arrive at behavioral objectives. Task Force II (1969) recommends "that greater emphasis be put on the development and use of criterion referenced task specific tests and behavioral checklists to be administered by classroom teachers (p.14)." An example of this type of program is described by Lilly (1972), the Diagnostic Teaching Model, which "focusses on enabling the teacher to determine the specific educational needs and the relevant learning characteristics for each child. After these have been determined, the teacher should be ready to state the appropriate behavior objectives and sequences of behavioral objectives for the child (p. 233)."

The prescriptive teaching system is basically what Lilly is advocating and is one way that both diagnosis and remediation can be utilized.

Prescriptive teaching is mainly concerned with methodology, but diagnosis is very important. The initial stage of a prescriptive teaching program is the evaluation of the child's present functioning, or his entering behavior, in order to begin on individualized instruction program (Peter,1972).

Diagnostic teaching moves away from formal testing mainly because "Diagnostic approaches that stress underlying causes, etiology and generic classifications provide no accurate information about where to start teaching the child and how to arrange the instructional environment to increase the probability that the child will respond correctly. . . . The purpose of behavior analysis is to define behavior precisely and record it accurately. . . . Behavior analysis observes and measures behavior in its present environment (p.48)." Only after the present bahavior is described can final objectives be established. (Prescriptive teaching is described in more detail in the section on Methods.)

Questions:

The following are some questions which seem to remain open regarding the diagnosis of learning disabilities:

(1) Since prescriptive teaching ignores formal diagnosis to a large extent, is it in any way deficient in outcome due to this omission? Can informal procedures adequately replace more formal procedures?

(2) How early, in terms of the age of the child, can a learning problem be diagnosed? How early can remediation be applied? Could this be effective in avoiding or preventing later learning disabilities?

(3) Can effective programs be developed for preschoolers to prevent later learning disabilities?

(4) When a school-age child shows symptoms of learning disabilities, how can we distinguish between ineffective teaching strategy as the cause, and the existence of a real learning disability? To what extent are these indeed separate questions?

IV Teacher Qualifications and Training

The qualifications that a teacher should possess to work with learning disabled children raises many questions. Is it important that a regular teacher have different qualities and training than a special class teacher? If a learning disabled child is integrated into the regular class should the teacher be trained differently? There are a number of variables that arise when discussing this topic. It is important to note that there are a variety of types of teachers and a number of situations which need to be discussed. For instance, if integration of the learning disabled child is to occur there may be a resource teacher who works with the child. Should her qualifications be different from that of the isolated special class teacher, or the regular classroom teacher who has these children in her room?

It has been found that many children who have been labelled learning disabled have become this way mainly because the proper method of instruction for them has not been used. Not all children can learn the same way, yet many

teachers use one form of instruction, and if the child cannot learn by this method he is the one that suffers. According to Bateman (1971), "Research indicates that most reading retardation stems from the dreaded psychoeducational disease we have labelled dispedagogia--poor teaching (p.271)."

Koppitz (1971), in his Five Year Follow up Study on Children with learning disabilities discusses the qualities that special education teachers should possess. He believes they must be flexible to deal with the various problems and should try different methods to find out the best way that the child learns. He recommends that "Special education teachers should be, above all, warm but firm, resourceful and flexible and they must have patience and a good sense of humour. Each teacher should be supported and backed by a team of professionals consisting of a principal, a social worker, a psychologist, a language therapist and a psychiatric consultant as needed. The aid of para-professionals should also be solicited (p.199)."

A question which can be asked is whether these qualities are any different from those which a regular teacher should possess.

How teachers are trained to deal with the learning disabled child has also been questioned. In 1969, Phase II of the Task Force on Minimal Brain Dysfunction discusses the findings of research on teacher preparation. They state that "(a) little effective research has been accomplished, (b) specification of observable teacher behaviors is essential to any further refinements in teacher training, evaluation and research, and (c) the refinements in direct observation and measurement of behavior in the classroom during the teacher learning act are the most significant and promising developments to come from research thus far (p.32)." They pose the following questions regarding teacher preparation:

"(a) What techniques [exist] for direct observation of teacher's recording and measurement of classroom behavior?

(b) What measurement can be used to assess child performance as the ultimate criterion of teacher effectiveness?

(c) What kind of observable performance should teachers show? (p.32)."

The question of upgrading teacher preparation for special classes also affects the regular classroom teacher. In the Report of the Ontario Committee of the Commission on Emotional Disorders in Children, it is suggested that the regular teacher should be able to cope with all problems of a child and therefore, that "appropriate action be taken to upgrade teacher training programs in order to prepare and enable teachers to meet the special needs of most students within the regular classroom (p.89)."

Peter & Wisely (1971) of the Evelyn Frieden Centre for Prescriptive Teaching of the University of Southern California discuss how student teaching can be made a more effective learning experience. By having the opportunity to solve real problems the student teacher will learn more, "therefore the student teacher must be allowed to teach students who have learning problems instead of a group of normal children (p.2)." They advocate that the prescriptive teaching system should be taught to enable the student to be a more effective teacher. This system is described below in the section on methods.

The training of new teachers in the best possible way is of great importance but there is also the question of retraining those who are already teaching. Many inservice training programs have been developed. It is especially important if integration of learning disabled child into "normal" classrooms occur.

Glass and Meckler (1972) discuss a study on preparing elementary teachers in instructing mildly handicapped children in regular classrooms. A summer workshop program was set up to equip elementary teachers with diagnostic, remedial and behavior management skills. Though appropriate control groups and random selection procedures could not be used, and though resources were not available for follow-up when trainees left the workshop, teachers seemed to

learn the specific skills needed to teach mildly handicapped children. The article suggests that functional preparation with emphasis on developing and practising specific skills may be more productive than traditional abstract university courses.

Questions which may be of interest regarding teachers' qualifications and training of teachers are as follows:

(1) Should a regular classroom teacher have different qualifications and training than a special class teacher? The literature does not appear to deal with this question at present.

(2) How efficient might an inservice training program be in retraining regular classroom teachers to deal with the learning disabled child?

(3) What are good methods of retraining regular classroom teachers in instructing learning disabled children in the regular classroom?

(4) How useful and generalizable is prescriptive teaching as a model in the training of teachers to work with learning disabled children?

(5) What strategies might be useful in helping teachers and other professionals to work effectively together in the teaching of the learning disabled? How unique are those strategies and skills?

V Structuring the Learning Environment

A child experiences a learning problem and the teacher must find an appropriate method to compensate for his problem. There is a question regarding method. Does one attempt to remediate the learning difficulty or does the teacher try an alternative method to teach the content or skill? For example a child is not able to read and it is found that he has a visual motor problem. Is it best to train this area of disability and hope that this improves his reading or does she try various techniques in teaching him how to read? Another example could be a child unable to make simple maps, unable to arrange the locations of known places. If this child also has an eye-hand co-ordination

problem what should have the teacher's priority or should the two questions be tackled together? This is a question of major concern.

It is important to remember that the techniques used with the learning disabled child can also be used with the regular child as well as the severely retarded or emotionally disturbed. It does not necessarily matter what the label is.

An important consideration in discussing methods, materials or methodological approaches is that there is not likely to be only one solution to any individual child's problem. It would be very nice and simple if, on the identification of a problem, the teacher could be sure there were an appropriate kit "on the shelf." Real situations are, however, too varied and complex for this to ever be more than just a part of the solution. The teacher of the learning disabled child especially needs the skills associated with comprehensive strategies of diagnosis and instructional design precisely because these pupils are not able to succeed <u>in spite</u> of whatever the teacher might or might not do. Less "sloppiness" is acceptable in the system: in a regular classroom there is probably some room for imprecision of instructions to students, and they are more likely to be able to function adequately on their own. For the learning disabled child careful individualization of programs is critical. The teacher must have at her disposal general principles of structuring the learning environment.

Individualized instruction, teaching to each child's basic needs and working at his own pace, is an approach which has gained widespread acceptance. It is especially important, for example, if integration of the learning disabled child into the regular classes is to occur. Integration is also discussed separately below.

In the following sections, several approaches to instructional design, some very broad in scope (e.g., Task Analysis), are discussed in relation to their contribution to the education of learning disabled children. From the point of view of potential research (the overall concern of this report) these

approaches are described because considerable work remains to be done on their validation, and developing strategies for implementation.

Task analysis is a part of the designing of instruction. It is not a formal system like Prescriptive Teaching which is associated with a particular innovator. It is related to the literature on behavioral or instructional objectives. It consists of stating a terminal objective for a child and describing a set of learning sequences for the child to attain this objective. The task (e.g., tying shoelaces or writing a proper sentence) may be broken down into very specific steps in order for a child to best learn. If a set of sequences is set up in each content area then the child who is in a special class could ultimately fit into a regular class. He may be working at a slower pace than the other students but this type of system has the advantage that the learning disabled child will ultimately go back to the regular class. Task Force II (1969) states that functional analysis of behavior is an approach to children's learning disabilities in which procedures to describe specific bahaviors are described and remedial strategies are planned.

Siegel (1972) discusses effective teaching using task analysis. By selecting relevant well-defined objectives and arranging the appropriate sequences, the child can be effectively taught. The steps to follow in planning a program are "(1) select a relevant and appropriate task, (2) know or create a specific sequence of steps based on the hierarchy of competences needed to perform the task and (3) make the necessary modifications based upon the child's profile of strengths and weaknesses (p. 520)." Task analysis is independant of the method used. This is left entirely to the decision of the teacher.

Prescriptive Teaching (Peter, 1965) "consists of those modifications of instruction and other school variables which are based upon individual diagnosis in the direction of assisting the child's learning (p.1)." It is "a process which employs an interdisciplinary approach to diagnosis, determines, the educational relevance of the child's disability and devises teaching

procedures to yield positive results. It achieves this through a methodology based on scientific formulation which relates the specific elements of the educational program to the diagnostic information (p. 11)." In a later work, Peter (1972) notes, "The Prescriptive Teaching system utilizes the methodology of systems analysis to bring together the components of effective teaching into a total integrated input to optimize the effectiveness of the teacher (p.3)." The procedure consists of varying one environmental factor at a time and observing its effect on the child. After the teacher knows the best way that the child will learn, terminal objectives are set up. The teacher will know what best motivates a child and what are the best reinforcers.

"Terminal objectives should be established after the referral observation and diagnostic teaching have determined the child's entering behavior, including his responsiveness to certain elicitors and reinforcers and whether they are organic or other factors limiting developmental expectations for the child. Terminal objectives should be established before curriculum methods and materials are selected (Peter, 1972, p. 85)." With the entering bahavior described and terminal objectives decided, there may be objectives enroute which must be set down in sequentially ordered tasks and stated in behavioral terms.

Hayes (1967) describes a study in which Prescriptive Teaching using individualized instruction based upon behavior modification was used in a special classroom. The study consisted of thirty children who were underachieving and emotionally disturbed. They were placed into three groups, in which (1) Prescriptive Teaching was used along with behavior modification for academic achievement and emotional adjustment, (2) only bahavior modification was used, and (3) special classes operated in a traditional manner. The results after two months showed that group one was higher in academics and groups one and two were higher on behavioral improvements than group three. "This study demonstrated that a classroom operated on behavior modification provides an effective behavior management technique but that Prescriptive Teaching identified and remediated

specific educational handicaps (p.8)." As the study was only carried on for two months, conclusions cannot be made about long-term effects.

Prescriptive teaching would seem like a good way of planning an appropriate program. It is recommended by Peter for both regular and special teacher. Extensive validating research for Prescriptive Teaching, however, does not seem to have been so far reported.

Precision Teaching

Kunzelman (1970) gives a very good explanation of Precision Teaching. It provides individualized instruction for every child. "Its procedures are based on the traditional concept of measuring and recording a child's progress but the measurement and recording techniques used in precision teaching are revolutionary. . . . The Precision Teaching format follows a simple pattern of pinpoint, record, change, try again (p.9)." In order for effective Precision Teaching to occur, there must be accurate identification of the educational objective.

Another important aspect of precision teaching is that the child is responsible for the changing of his own behavior. "Precision Teaching is not another method of teaching. Precision Teaching is not a refined behaviorist approach to teaching. Precision Teaching is one way to plan, use, and analyse any teaching style, technique, method, or theoretical position--old or new (p.12)."

Kunzelmann's handbook, Precision Teaching, provides valuable information on precision teaching techniques. "A few basic methods are discussed. Measurement, such as a standard educational unit (movement cycle) and a way to see the measurements (charting), is taught. Planning is taught by showing instructional options, how and who can use them and for what purpose. Recording is taught to insure that the plan of teaching may be accurately tracked in the classroom or learning environment (p.12)." This book was very impressive and readers may well wish to consult it themselves.

A report on precision teaching was prepared by Lavitt (1973). He studied seven projects which were concerned with one or more components of self-management in order that pupils would become more independent.

These studies "demonstrate that a number of the behaviors that comprise teaching can be administered by pupils of elementary school age... [and] pupil-management elements can be associated with a wide range of pupil responses. The responses measured in these studies ranged from talk-outs and hits to reading words and computing problems (p. 150)."

Open Education and Learning Disabilities

Open education may be looked at in terms of its effect on the learning disabled child. Peter Kroolock (1973) discusses open environment for the emotionally disturbed, but many of the same ideas can be used for learning disabilities or other children. He says of open education: "There is an opportunity for each person, child, and adult to have something to say about what is done and why it is done (p. 360)." The open education environment contributes to the child's self realization by giving the child the opportunity to manipulate and explore various materials, to have a choice of what to learn and when to learn it, and how much time can be spent. There is not just one way that a child can learn and the open environment emphasizes a variety of means and methods whereby the child can best learn in a way which is suitable for him. The teacher in this type of atmosphere can truly function as a diagnostician because she can observe how children operate, both with materials and other individuals. (For an indepth look at open education refer to the report, in this same overall project, prepared by Felicity Tallboy.).

Drugs and Learning Disabilities

It has been suggested that drugs may be helpful in helping the learning disabled child to learn. Many learning disabled children show symptoms of hyperactivity and inattention, and thus many educators feel that drugs which

alter these behaviors may help the child to concentrate and therefore learn better.

Zedler (1970) studied the effects of anticonvulsant medication on academic performance. The groups studied were (a) the experimental group: those receiving medication while remaining in the regular classroom, and receiving extra individualized instruction outside of school, (b) the control group who were those in special classes receiving anticonvulsant medication in both classes. The results showed that there were "no significant differences in scholastic achievement when the experimental group was compared with the experimental unmedicated group or when the control medical group was compared with the control unmedicated group (p.26)."

The conclusions of this study showed that medication did not seem to help the academic performance of the children, whether in a special or regular class. This study did not mention how the experimental medicated group compared with the control medicated group, that is, how the medicated learning disabled child in a regular class compared with the medicated learning disabled child in the special class. This is worthy of further study.

Megavitamin therapy, the application of massive doses of vitamins has recently been used very productively with emotionally disturbed children (Cott, 1972). Cott also discusses the megavitamin treatment for children with learning disabilities. The megavitamin treatment, "orthomolecular therapy," is defined as "treating mental illness by providing for the optimum molecular composition of the brain - expecially the optimum concentration of substances normally present in the human body (p. 247)."

Cott suggests that further research in the use of this therapy is needed but his studies have found it very encouraging. Children who remain in treatment for the longest time make the greatest progress, and those who begin therapy very early in life have a better prognosis. The effect of time alone, of course, is rarely adequately controlled in such studies.

Questions

(1) Can features of these different approaches to structuring the learning environment be effectively combined?

(2) "Is the curriculum for young children overweighted in certain areas, i.e., providing experiences and developing language, or would a good developmental curriculum provide more opportunities for developing gross motor, visual perceptual and grapho-motor skills (Task Force II, 1969, p.28)?"

(3) What is the effectiveness of play therapy, insight therapy, and family therapy for children with learning disabilities? (Question suggested by Tarnapol, 1971).

(4) Besides facilitating specific learning, do drugs or megavitamins also affect learning in areas in which the child is not learning disabled? In other words, what are the educational side-effects?

(5) What is the interaction between chemical therapies and learning situation, for example, the child's being in a regular or special classroom?

VI Notes on Specific Areas of Curriculum

Numerical Problems

It was pointed out by one of the experts consulted that a child may have a learning disability which results in his inability to grasp numerical concepts. Even when presented with extreme concrete meterials they still have problems. The question arises as to why these children are unable to grasp numerical concepts. What method should one use when concrete objects are ineffective?

There is also the child who can grasp numerical concepts with the use of concrete materials but remains at this level while not being able to grasp abstract ideas. How can a child be taught abstraction?

The extensive general literatures on the teaching of mathematics, and,

for that matter, language, could not be surveyed within the time limits of this preliminary survey. It is certain that they would contain material relevant to learning disabilities, amd such a search should be undertaken in these contexts.

Reading Problems

A child who is learning disabled is very likely to have a reading disability. Reading is very important in a child's school experience. If a child cannot learn how to read it is very likely that he will lose out on gaining the most from his years at school. It is true that children who cannot read could still benefit from school experience, but this would depend greatly on the teacher and the type of materials used. Silberberg and Silberberg (1969) discuss the idea that a child who cannot read could still be educated by other means such as audio-visual materials, tape recorders, books on records, films, projectors, art, music, role playing, field trips, discussion, and guest lecturers.

A child who may be called learning disabled because he is not reading may just be suffering from poor teaching in reading. It is important to know the child's strong areas and thus apply the appropriate methods, taking advantage of these strengths. Koppitz (1971) advocates trying various methods using different senses to teach a child. For example, one child may learn better aurally while another learns better visually. For this reason it is especially important that the special education teacher must be flexible.

In discussing ways of teaching reading, Chall (1971), believes that the code emphasis programs rather than the meaning emphasis programs have shown good results but she also says "I cannot emphasize too strongly that the evidence does not endorse any one code emphasis method over another (p. 307)."

Usually when a child has a reading disability he is given some form of remediation. Silberberg and Silberberg (1969) did a study one the effectiveness of remedial reading. Their results indicated that reading achievement in the group that received remediation improved more than in the control group at the

end of the remedial period, but in their follow-up they found that the effect of this remediation wears out (extinguishes) in a relatively short period of time after the remediation has ended.

Questions

There is probably a larger research literature on reading than for any other specific part of school curricula. It cannot be even representatively sampled here. The enormity of the task is compounded by the importance of reading to other learning. Research questions that can be foreseen must therefore be very general.

The most important of these is, how much sharing is possible between techniques in the teaching and remedial teaching of reading and in learning disabilities? These areas have frequently developed their own "establishments" and specialists.

VII Perceptual Problems

"The term 'perceptually handicapped' while not exactly a misnomer, has often been applied to all children with learning disabilities though it is undoubtedly true that many learning problems can be traced to inadequate perceptual functioning many others occur at higher cognitive levels with no perceptual impairment whatsoever (p.36, Junkala, 1972)."

There has been much research carried on in the area of perception and its relation to learning disabilities. Many tests have been devised to find out in which perceptual areas the child experiences problems. Various programs and training techniques have been devised to help the child with his perceptual problem. Unfortunately, many educators have relied extensively on these training programs and would apply them for any child who has a learning problem: their effectiveness was not known, but they would still be used. Mann (1970) discusses how perceptual training has become a fad. He criticizes the programs and advocates that emphasis should be on educational or therapeutic

techniques. As noted by Dunsing (1973), there are probably not enough children with identical problems to allow the development of widely applicable remedial packages. The importance of general instructional design skills for teachers is again stressed.

Frostig (1964), Kephart (1960), Barsch (1964), and Getman (1964) are a few of those who have devised perceptual motor training programs.

At one time educators accepted these training programs as the answer in helping learning disabled children. There has been no empirical basis that a direct relation exists between perception and learning. There is no firm evidence that training in a perceptual area will help the problems of a learning disabled child. In this regard, a controversy is presently occuring. Some educators say there is a relation , yet others do not. For example, at the McGill Montreal Children's Hospital Learning Centre, a summer program involves children in a gross motor program which is carried on in a gymnasium atmosphere. It is mainly used to help the child's self-concept and morale.

Hammill (1972) discusses the research that has been done in visual perception. He defines visual perceptual processes as "those brain operations which involve interpreting and organizing the physical elements of the stimulus rather than the symbolic aspects of the stimulus and are usually referred to as visual discrimination and/or spatial relationships (pp. 553-554)."

The research he looked at satisfied the following criteria: (a) only post-1955 reports, (b) tests of reading comprehension only, (c) visual perceptual tasks had to satisfy the previously stated definition, (d) only studies which applied statistical analyses were chosen, (e) the perceptual instrument could not be commonly used IQ measure such as Bender or Draw-a-Man, and (f) only research using first or second grade subjects was suitable. The conclusion of this study was that there is little correlation between measures of visual perception and tests of reading comprehension.

Hallahan and Cruikshank (1973) discuss perception and the value of the

perceptual motor training programs. They looked at the research studies done in this area between 1965 and 1970 and found no conclusive evidence that perceptual motor training was or was not valuable for academic learning. The problem with the studies was the research was of poor quality. They say "Research to date points in opposite directions and suggests that visual perception will not facilitate school learning (p. 174)."

The relation of perception to reading is an area of great importance. In the past when a child had a reading problem it was very likely that he would be trained in the perceptual area. Kephart (in Hallahan and Cruikshank, 1973) believes that certain non-academic skills are needed prior to reading, yet some critics feel that though a child's perceptual motor ability improves, it does not necessarily mean this is going to be carried over to higher thought processes.

According to Hallahan and Cruikshank, "There has been considerable empirical support for the notion that perceptual problems can result in later difficulties in conceptual, abstract, intellectual operations. Too numerous studies of a correlational nature suggest that visual-auditory integration disabilities in the later grades may be at the root of reading disabilities. Yet despite the intuitive appeal of this last possibility the correlative date regarding perception and reading do not justify unqualified endorsement of the proposition that perceptual disabilities cause reading disabilities. After all correlation between the two problems may be the result of a causal effect preceeding in either direction, or they may both be associated with a third unknown causative agent (p. 174)." Silberberg and Silberberg (1969) report that various studies show that children who are learning disabled have visual perceptual problems and because of this many teachers will train a child in these areas in the hope of helping him to improve his reading. They point out that research indicates that training in visual perception will help visual perception but not usually reading. Cohen (1970) claims that Kephart's perceptual motor training program does not improve reading. He discusses certain other studies on

Kephart's techniques such as by Roach (1966), Brown (1968), and Ross (1966) who are in agreement with him. Haring and Stables (1966), reported that various perceptual and motor abilities were improved in a Kephart-type program.

Goodman and Hammill (1973) conducted a review of the efficacy of the Getman and Kephart techniques. The results of forty-two studies have shown unrewarding results when Getman and Kaphart techniques were used. They state that the same nonpositive trend is also evident in the literature pertaining to Frostig (Hammill & Welderholt, 1972) and to other programs as well (Hammill, 1972). "Participation in the training programs produced little improvement in the children's visual-motor functioning. Their readiness skills were improved in only a few instances. Furthermore, the effect of training an intelligence or achievement was not clearly demonstrated (p.7)." The authors suggest that perceptual-motor training might be effective under some conditions and they suggest further research to (a) identify the characteristics for whom training is beneficial, (b) determine the optimal amount of training necessary to produce real perceptual and/or motor growth, (c) demonstrating that perceptual-motor processes can actually be improved as a result of training.

According to Cohen (1970), research indicates that "as a group reading disabled children experience perceptual disturbances (p. 174)." He feels that perceptual motor training should be done only if a child has perceptual problems and not just because a child was below his grade level in any subject.

Training visual perceptual skills using currently available programs, therefore, has no known positive effect on reading and possibly none on visual perception.

Questions

Several questions regarding perception have already been discussed above. Two others also seem worthy of study.

(1) What effect does perceptual-motor training during pre-school years have on later learning?

(2) What are the comparative effects of specific remedial techniques versus perceptual-motor in overcoming specific learning disabilities?

VIII Integration versus Segregation

The question of whether the learning disabled child should remain in a special class or be kept in a regular class remains of great importance. There are advantages and disadvantages to both sides of the question. Studies on each of these areas have been done but the question still remains. If integration is to occur, then what types of facilities, qualifications, aid, etc, are needed in the regular classroom? An attempt has been made to explain what has been done in the field in hopes of planning new research.

Segregation

The learning disabled child is taught in a self-contained special class mainly because he cannot cope with the regular classroom. Many educators believe that this is the best learning environment for the learning disabled child.

Koppitz (1971) did a five year follow-up of children with learning disabilities in special class placement. He discusses those children who received the most from special class placement and who would eventually be able to attend regular classes. He states "It can generally be said that immature, poorly integrated, poorly controlled, emotionally disturbed children, who may or may not be diagnosed as having minimal brain dysfunction and who are 8 to 10 years old can benefit greatly from a period of time in Learning Disability Classes. They usually can return to regular classes after 2 to 5 years of special education, provided they are of normal intelligence, have no serious deficits in auditory perception, language development and memory and are not achieving more than one year (or at most 2 years) below grade level, are non-acting-out-youngsters and come from a reasonably stable and supporting home (p. 54)."

As the purpose of Koppitz's study was to return the learning disabled child back to the regular classes he discusses the length of time the child should stay in a special class and what should be emphasized. He believes firmly that "a failure to provide special classes early enough for more children contributes to the ever increasing number of youngsters with learning and behavioral problems (p. 206)." He feels that a well run special class has many advantages and can be very effective if integration is to eventually occur.

In a special class, the educator should build on a child's strengths to teach him to learn and to also give special help to his weaknesses. Because so many learning disabled children at first suffer from failure in a regular classroom, it is important that in the special class their emotional state is built up. He says "It is strongly recommended that the emphasis in the Learning Disability classes be shifted from remediation and rehabilitation to the prevention of learning and emotional problems (pp. 182-183)."

Koppitz is not advocating special education as the final place for the child. When a child is emotionally ready to cope with the regular class he should be put there. "Some children may be ready for return to regular classes after only 2 or 3 years, others may need 5 or even 7 or 8 years before they can hold their own in regular classes. Again, other youngsters may never leave special classes (p. 133)." If a child can never cope with a regular class he may remain always in a special class.

The Plowden Report (1967), a study of English primary schools, discusses the slow learning child and the length of time he should be in a special class. "Even the child who will never catch up may profit from the stimulus of a change of teacher and companions and ought not to remain in the same slow learning class for more than two years if it can be avoided (p. 302)."

The results of this study showed that 30 out of 177 children returned fairly successfully to regular school. Those that returned did not have learning problems that were too severe. Koppitz says that if parents or teachers had

understood these children's problem at an early age and had provided an effective program to meet their needs, then most likely they would not have needed the special class.

Those children who were able to hold their own in regular classes were the ones who stayed more than three years in a special class. These children were basically slow learners and did not have specific learning disabilities. They needed the less pressured classes to mature at their own rates. The regular school curriculum did not make allowances for these immature pupils.

As a result of these studies, Koppitz recommends "Pupils should be grouped in special classes according to their functioning and needs and not on the basis of their IQ scores or their diagnostic labels.... Learning disability classes should be integrated into the regular classes whenever possible. Segregation of learning disabled pupils should be kept to a minimum. However, there will always be a few extremely vulnerable children who will need self contained protective classes in order to function at their best (p. 198)."

Valletutti (1969) talks more of a retarded child but also applies this to the learning disabled child when he says that integration may be destructive if children are returned to teachers who are debilitating. He feels that reeducation of teachers is essential in order to sensitize them to these children.

Dunn (1973) discusses remedial education and special education. He feels that the trend which is towards integration will be reversed because children with severe learning disabilities need more intensive special help than can be provided by an integrative program.

Questions

(1) Task Force II (1969) asks the following questions: (a) What should be the basis for placement in a special class?, (b) Should placement be based on medical-psychological diagnosis, including etiology, psychoeducational assessment indicating areas of deficit, achievement failures in specific areas of skill such as

reading and arithmetic or, social adjustment?

(2) In segregating a child with learning disabilities, what is the maximum or optimum length of time that he should remain in a special class?

Integration

There are many opinions as to whether the learning disabled child should remain in the regular classroom rather than in a special class. Dunn (1968) wrote a controversial article regarding the integration of the mildly handicapped child into the regular classroom His "Blueprint for Change" which explains how this integration can be carried out is very interesting to look at. He advocates diagnostic or prescriptive teaching carried out by an itinerant teacher so that an effective program would be planned for the child.

Cristoplos (1969) explains that segregated classes were designed at first to maintain homogeneous grouping. Those children who could not meet the demands of the regular classes were placed in a special class. Yet he warns against the fact that when a child is in a special class, it often occurs that he remains there. Because individualized instruction is gaining widespread acceptance, he feels that there is not such a need for special classes, and children can receive the attention they need in the regular classes.

Lilly (1970) feels that special self-contained classes should be discontinued for all but the severely impaired. In order that various types of integration can be effectively carried on, he does not give an alternate method for teaching these exceptional children, but gives a definition of an "exceptional situation," "one in which interaction between the student and his teacher has been limited to such an extent that external intervention is deemed necessary to cope with the problem (p. 48)."

In the Report of the Provincial Committee on Aims and Objectives of Education in the Schools of Ontario (1968), the authors believe that special education should not be seen as something separate from the ordinary school program, but that it should be an integral part of that program.

There are many facets of integration to be looked at. Lilly (1970) discusses a training based model for special education. This model changes special education from being a child centred to teacher centred program aimed at upgrading the skills of the teacher.. It incorporates the "zero reject model" which is that "once a child is enrolled in a regular education program within a school, it must be impossible to administratively separate him from that program for any reason (p. 745)." This model's goal is "to make teachers self sufficient, able to handle problems rether than refer them (p. 746)." The teacher who had a child with a problem would seek the advice of an "instructional specialist" whose job is "to change the behavior of the teacher thereby enabling him or her to change the behavior of the child (p. 746)." At no time would the child be removed the regular class. In the same way, Dunn (1973) discusses "special education consultants," "who primarily provide indirect services to exceptional children by working with the regular classroom teachers ... after observing the regular teacher working with the child who has a learning problem, the consultant dies diagnostic teaching in an attempt to prescribe and provide the special instructional methods and meterials the pupil needs. She assists in "the continuous evaluation of the pupil and advises on the complex problem of making the necessary regular classroom adjustments for him to succeed (p. 25)."

Another type of service discussed by Dunn (1973) is using "itinerant or school based tutors." This specialist spends part of her time directly tutoring the child and the rest of her time is spent doing consultation. Though this tutoring is usually done in a small room it has been beneficial for these teachers to "do their specialized tutoring and small group instruction in the regular classroom in a team-teaching situation.... Thus the two programs can be integrated and coordinated (p. 26)." These itinerant teachers are very similar to special education resource teachers except that "the latter makes possible larger-group instruction (p. 27)." The child goes to the special resource room for specialized instruction.

Hammill (1972) states that goals of resource room should be "to provide

needed services to pupils and their teachers while the pupil remains most of the day in the regular classroom (p. 350)." He says that the resource room approach seems to be very good but research in this area suffers from being inadequate in terms of such things as length of study and small sample size. Though he is in favor of the resource room approach, he feels there are still some children who are so unmanageable or have such severe problems that they cannot be maintained in a regular class.

Iano (1972) says that "resource room programs have introduced considerable flexibility and have permitted greater integration of handicapped children into the general school program, they have been only a partial solution for many educably retarded children (p. 175)."

Sabatino (1972) studied the value of resource rooms. His results showed that children with learning disabilities need something extra whether it be prescriptive teaching, behavior modification or emotional support and he feels that in a resource room, these practices could be carried out. He feels that the advantages would be that special education would be able to increase their services to serve a larger number of children, and it is also conducive to individualization.

Griffiths and his colleagues (1972) did a study on learning disabled children who were kept in the regular classroom. Teacher aids were used for help. Though there were certain inadequacies of the experiment due to time and small number of children involved, it does give some idea that these children can benefit from being in the regular classroom. They conclude that children with learning disabilities can be recognized by the classroom teacher once she knows how to identify the symptoms,and through inservice programs, the teacher can make better use of materials to aid the child.

Volunteers have been used beneficially as aids for learning disabled children. The Celdic Report (1970) explains how the Ottawa Public Schools used tutors two or three times a week. They would take the child out of the class and help him with his work.

Cristoplos (1973) discusses the use of interstudent tutoring as means of integrating the exceptional child into the regular class. One child, who already knows a certain concept, could teach one that doesn't, thus helping each other. In order for this method to work, proper record keeping and task analysis must be used. "To teach effectively, the pupil's abilities, not disabilities, must be known (p. 570)." In this way, the best method to be used with the child will depend on that which he is capable of learning.

Drass and Jones (1971) studied six children who had behavioral problems, academic problems, and social problems, and who were between the ages of five and sixteen. Three students and three tutors were used and both operant conditioning and praise were applied to all. The results showed that tutors were able to modify problems of capital letter recognition, the beginning of an assignment and the completion of an assignment. Though it was not systematically studied whether or not these behaviors transferred into the classroom, the teachers suggest that they did. The study did not say much about the effect on the tutors, so this is an area for possible research, as well as the possibility of having the tutors help these children in the regular class, while the teacher is there.

Zedler (1969) reports the results of a two year study. Underachieving children with adequate sensory motor and intellectual mechanisms and with medically diagnosed neurological disorders remained in regular classrooms and were given additional language therapy by trained clinicians outside of school hours. These children showed greater progress than those others who were removed from regular classrooms and taught in special education classes for the neurologically impaired (control group). The results showed that experimental subjects gained two years in educational age, while the controls gained one year over the two years of the study.

Bradfield (1973) demonstrates how the educationally handicapped child can be maintained in the regular classroom. In 1969, in North Sacramento, three mentally retarded and three educably handicapped children who were previously

placed in a self-contained class were integrated into a regular grade three class with 22 other children. At first, a learning centre approach and behavior techniques were used, but though the exceptional children did well, the regular children fell behind the regular children in other classes. The next year, the methods used were prescriptive teaching, structuring the curriculum and consequences for appropriate performance. All work was done individually and cross-age tutoring was initiated. There were sixth graders who tutored non-readers two times a week for a half hour. The results were favorable in that the special child and the regular child did as well or better than those children in their control groups. "By modifications in regular class programs, the special child can gain as much or more than do children in traditional self contained special classrooms (p. 390)." This study also provides a caution concerning the possible effects of placing learning disabled children in the regular class on the other children, and also concerning the importance of properly designing the overall program.

Questions

(1) What is the effect of class size when the learning disabled child is kept in the regular class?

(2) How might peer-tutoring and other types of student tutoring be most effectively used in integrated or segregated classes? What are the associated effects on the tutors?

(3) What are the non-academic effects of segregation and integration, for example, on self-concept?

IX Comments from Consultants

Several experts in learning disabilities were consulted during the preparation of this report. These were Susan Campbell (Psychology Department, Montreal Children's Hospital and Assistant Professor of Psychology, McGill University), Professor Howard Stutt (Chairman of the Department of Educational

Psychology, McGill University, and Director of the Master of Education program in Special Education), Professor Dorothy Sokolyk (Associate Professor, Department of Educational Psychology, McGill University) and Dr. Sam Rabinovitch (Director of Learning Centre and Professor of Psychology, McGill University). There were several others who could not be contacted because they were on summer vacation.

Some of the major comments and questions offered by the above people are given here. Contributors are not specifically identified because of the very casual nature of the conversations. They are grouped here in part so that the points expressed may be clearly recognized as not coming directly from the literature.

Consultants were asked what they considered to be the major areas of learning disabilities in need of research, and what they considered were the important unanswered questions.

Consultant A felt that every area of learning disabilities could be discussed. The questions he asked were (1) Is there a relation between gross motor ability and reading disability? (2) Is there a relation between perception and reading disability? (3) Which children would outgrow learning disabilities? (4) How does the early development of a child with learning disabilities differ from that of a normal child?

Consultant B describes the areas of concern as (1) Definition of Learning Disabilities, (2) Methods (a) Is it possible to use a specific method for a specific type of learning disability? (b) Can a sequential program be carried out in a large regular class? He feels that there should be a sequential set-up in learning various subjects so that when a child is in a special class, he will learn according to the designed sequence and thus be placed back in a regular class. (c) Can an individualized curriculum work with a large number of children? (3) Integration He believes that within ten years special education for the learning disabled children in special classrooms would not exist. There would only remain the special classes for the cerebral palsied and retarded child,

just as it used to be. Since the learning disabled child would be in the regular classroom, problems would arise, such as (a) What type of training should regular teachers have to cope with the learning disabled child in their classroom? (b) What types of help would be available to regular class teachers? (c) What is the advantage of parent aids? How many are needed? (d) What is the advantage of using older children as aids? (e) How can the best possible use be made of timetabling, i.e., working with another teacher so that one teacher works with a certain type of child while another takes a larger group? (f) What is the role of a free flow teacher? (4) Budget (a) What effect would extra money have on the education of learning disabled child? (b) How should the resource room be handled? (This question does not deal specifically with the learning disabled child but would have an effect. Too many materials in a school are kept by one teacher without sharing.) (c) How can we best utilize the materials we have? (5) Preparation of teachers This is the biggest question, he feels. What is the best training for a teacher in a regular class who has to cope with the learning disabled child?

Consultant C does not like the term learning disabilities, especially when used as a label. He believes all children should be treated as individuals with their individual problems.

Consultant D feels that there have been no answers to any questions concerning learning disabilities. Some of the questions he raises concerning Reading are (1) How many different categories of reading problems are there? (2) Is it possible to decide on what the problem is and then provide a treatment for it? (3) Is there any way of exactly knowing how a child can read? With regard to perception, he says that there are no real facts which would cause one to believe that there is a relation between perception and learning. The research recently has swayed away from this link. Questions in this area are (1) Is there a relation between eye-hand co-ordination and learning? (2) Is there a possible relation between gross motor activities and learning or sensory motor activities

and learning?

On Integration, he believes there is definitely a group of children in school that have a cognitive deficit and that there are a few children who need a special class in order to help their learning. He does believe in keeping a child in a normal situation, providing the teacher is flexible, and does not mind that all the children are at different levels doing different things.

X A Brief Reaction to the "Handbook on Special Education, A Description of Services Available for Exceptional Children" (Protestant School Board of Greater Montreal, 1969)*

It is possible to make a few comments on parts of this document (Class for children with specific learning disabilities, pp. 3-7) in terms of the preceding report. These comments deal primarily with the Handbook's emphasis on perceptual problems.

The first impression is that Handbook emphasizes specific training with regard to perceptual problems to the relative exclusion of teaching directed primarily at the learning deficiency itself. The balance needed between these two, at least the openness of the question, was discussed in the section on Perception. The Handbook gives the impression of favoring perceptual developmental tasks in virtually all areas of learning, rather than stressing the need to use the most appropriate method for each individual child.

XI Conclusion

Of all the questions considered, one seemed to stand out as the most pervasive. It concerns the value of very general approaches to learning disabilities. It appears that greater attention should be given to making certain that teachers (in whatever setting) have the skills in instructional design that will enable them to individualize learning. This does not preclude organizational variations (team teaching, open education, self-contained classrooms, etc.), rather, coping with these variations is an important skill in instructional design. The division between special and regular education is not sharp in this context, only (perhaps) the urgency of the need to do something about problems which are encountered.

A major challenge for research in learning disabilities is to generate evidence of the validity of a wide range of teaching strategies with clear indications of the conditions under which they are best used, for which student, and by which teachers.

XII ANNOTATED BIBLIOGRAPHY

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dysfunction. It summarizes the terminology and identification used with these children.

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Cratty, B.J. Some Educational Implications of Movements, Seattle: Special Child Publications, 1970.

An evaluation of various perceptual motor theories is presented. The author describes ways that movement experiences can help children with sensory motor problems.

Cratty, B.J. Perceptual and Motor Development in Infants and Children, New York: MacMillan, 1970.

An especially good book for parents and teachers. Perceptual and motor development and various types of programs are discussed.

Cristoplos, F. Keeping exceptional children in regular classes. Exceptional Children, 1973, 39(7), 569-572.

A study of three first-grade teachers and ways they could best integrate the learning disabled child in their class. Though there was no conclusive evidence, the author suggests task analysis, inter-student tutoring and record keeping could help with integration.

Cristoplos, F., & Renz, P. A Critical examination of special education programs. Journal of Special Education, 1969, 3(4), 371-379.

An interesting paper reevaluating the purposes of all types of segregated classes for the exceptional child. Studies are presented and seen from both empirical and philosophical viewpoints.

Cruikshank, W. Some issues facing the field of learning disability. Journal of Learning Disability, 1972, 5(7), 380-388.

The author discusses three issues related to the field of learning disability, (a) failure to adequately operationally define learning

disability, (b) lack of qualified college professors to teach and absence of quality programs for children and parent involvement, (c) threat of class action suits.

Drass, S.D., & Jones, R.L. Learning disabled children as behavior modifiers. Journal of Learning Disabilities, 1971, 4(8), 418-425.
An interesting study using older learning disabled children as tutors and applying techniques of behavior modification.

Dunn, L. Exceptional Children in the Schools. New York: Holt, Rinehart, & Winston, 1973.
This is a revised edition of the 1963 book. More recent research is presented and shows what major trends in exceptional children will be. It is an excellent, thorough book, recommended especially for all those who are interested in special education.

Dunn, L. Special education for the mildly retarded-is much of it justifiable? Exceptional Children, 1968, 35, 5-22.
A very interesting article which caused much debate. Dunn proposes integration of the mildly handicapped into the regular classroom by using outside aids. It is of special interest to all those who work with the exceptional child.

Dunsing, J. Learning disability: a science or witchcraft or let's save the baby after the wash. Academic Therapy, 1973, 8(4), 451-460.
The problem of doing valid research with learning disabled children is discussed. The difficulty remains as there do not seem to be enough children with similar type of problems.

Eaves, L.C., Kendall, D.C., & Crichton, J.U. The early detection of minimal brain dysfunction. Journal of Learning Disabilities, 1972, 5(8), 454-461.

A battery of tests is devised to detect those children who will experience learning difficulties. It appears to be a very good screening device.

Ellingson, C. The Shadow Children. Chicago: Topaz Books, 1967.

An especially good book for parents and classroom teachers which gives an overview of various questions concerning children with learning disabilities. A suggested reading list is given as well as a directory of United States agencies available for these children.

Engelman, S. Preventing Failure in the Primary Grades. Chicago: Science Research Associates, 1969.

A very good book in remedial techniques for the slow learning child in reading and arithmetic skills.

Falik, L.H. The effects of special perceptual motor training in kindergarten on reading readiness and on second reading grade performance. Journal of Learning Disabilities, 1969, 2(8), 395-402.

A very interesting study. Though results are not conclusive, they indicate that perceptual motor training in kindergarten does not have lasting effects on reading ability once children have learned how to read.

Ferinden, W.E., Jacobson, S. & Linden, N.J. Early identification of learning disabilities. Journal of Learning Disabilities, 1970, 3(11), 48-50.

A very good study explaining how teachers can predict those children in kindergarten who will have potential learning problems.

Ferinden, W.E., Handel, D.V., & Kovalinsky, T. A supplemental instructional program for children with learning disabilities. Journal of Learning Disabilities, 1971, 4(4), 193-203.

A study devised to keep children with learning disabilities in the regular educational program while providing specialized professional help to alleviate the area of disability. Results were positive.

Glass, R.M., & Meckler, R.S. Preparing elementary teachers to instruct mildly handicapped children in regular classrooms: a summer workshop. Exceptional Children, 1972, 39, 152-156.

A summer workshop can be used to train elementary teachers with diagnostic, remedial and behavior management skills in order to teach mildly handicapped children. Though this study had certain research limitations, it has valuable implications.

Goodman, L., & Hammill, D. The effectiveness of the Kephart-Getman activities in developing perceptual-motor and cognitive skills. Focus on Exceptional Children, 1973, 4(9), 1-12.

A discussion of the research on the efficacy of Kephart-Getman techniques as related to visual-motor skills.

Griffiths, A., Gillen, J.F., & Dankel, R. Leave dyslexics in the classroom. Academic Quarterly, 1972, 8(1), 57-65.

A study on whether dyslexics could remain in regular class provided they are given special help. There were problems in the experiment but there is an indication that these children could remain in the regular class.

Guilford, R. Special Education Needs. London: Routledge & Kegan Paul, 1971.

This is a very informative book for teachers Each type of exceptionality is discussed with regard to what is needed for each.

Hallahan, D.P., & Cruikshank, W.M. Psycho-Educational Foundations of Learning Disabilities, Englewood Cliffs, N.J.: Prentice-Hall, 1973.

An excellent book which discusses the psychological and educational factors related to specific learning disabilities. The field of learning disabilities is discussed from its beginning regarding various important people, their theories and specific programs. It is a thorough, up-to-date review which is beneficial to all people involved with children who are learning disabled.

Hammill, D.D. Evaluating children for instructional purposes. Academic Therapy, 1971, 6(4), 341-353.

The limitations and value of formal and informal means of evaluation are presented. He advocates the teacher as a partner in the diagnostic decision-making phases of evaluation. It is a very good article.

Hammill, D. Training visual perceptual processes. Journal of Learning Disabilities, 1972, 5(9), 552-559.

A very important article Research on visual perception is discussed and the effect on visual perceptual training on reading and visual perception is presented.

Hammill, D. Resource room model in special education. Journal of Special Education, 1972, 6(4), 349-354.

The author gives his positive reaction to Sabatino's article in favor of resource rooms for the learning disabled child.

Harshman, H.W. Toward a differential treatment of curriculum. Journal of Special Education, 1969, 3(4), 385-387.

A discussion of Dunn's article regarding integration. He is in agreement and believes in the importance of focussing on a child's behavior in order to get the child back into the regular classroom.

Harvey, J. To fix or cope: a dilemma for special education. Journal of Special Education, 1969, 3(4), 389-392.

A discussion of Dunn's and Cristoplos' articles regarding integration of the exceptional child into the regular classroom. Harvey challenges parts of both of their opinions.

Iano, R.P. Shall we disband special classes? Journal of Special Education, 1972, 6(2), 167-177.

A very interesting discussion with regard to integration. Labelling and placement of mildly or educable retarded children is discussed.

Jones, R.L. New Directions in Special Education. Boston: Allyn & Bacon, 1970.

This book shows the major trends in special education. It would be of special interest to teachers, psychologists and special education supervisors.

Junkala, J. Task analysis and instructional alternatives. Academic Therapy, 1972, 8(1), 33-40.

A good explanation of task analysis is presented and would be of interest to teachers whether in a regular or special class.

Kaluger, G., & Kolson, C.J. Reading and Learning Disabilities. Columbus, Ohio: Merrill, 1969.

An excellent book, especially written for classroom teacher, reading teacher and specialist characteristics of learning disorders regarding reading are presented. The book contains a very good review of the area of reading (i.e., skills needed, remediation techniques, diagnostic techniques).

Knoblock, P. Open education for emotionally disturbed children. Exceptional Children, 1973, 39, 358-365.

A very interesting discussion of open education for emotionally disturbed children. The ideas contained are useful for all types of education.

Koppitz, E.M. Children With Learning Disabilities - A Five Year Follow Up Study. New York: Grune & Stratton, 1971.

A very interesting report of a study of 177 children, aged 6 to 12 showing behavioral and learning problems. Special class placement is discussed in terms of program and how long a child should remain.

Kunzelmann, H.P. (ed.), Precision Teaching. Seattle: Special Child Publications, 1970. A very useful manual for training teachers to plan effective individualized programs. Techniques of measurement, recording, and lesson planning provide information so that the appropriate decisions can be made for each child in a classroom.

Lewin, E. Communication between classroom teachers and learning disability teachers. Academic Therapy, 1971, 6(3), 253-256.

A very good article discussing the importance of meetings between regular

classroom teachers and remedial teachers. In this way, the best possible service is provided for the child.

Lilly, S.M. A training based model for special education. Exceptional Children, 1971, 37, 745-749.

This article discusses a new model program for special education called the zero reject model. Once a child is enrolled in a regular education program it must be impossible to separate him from that program. The emphasis is on retraining the regular teacher to cope with children's problems.

Lilly, S.M. Special education: a teapot in a tempest. Exceptional Children, 1970, 37, 43-49.

Previous research on the value of special classes is discussed. Lilly believes that self-contained classes should be discontinued immediately for all but the severely impaired.

Lovitt, T.C. Operant conditioning techniques for children with learning disabilities. Journal of Special Education, 1968, 2(3), 283-290.

A good description of behavior modification and how to use it. Especially good article for teachers.

Lovitt, T.C. Self management projects with children with behavioral disabilities. Journal of Learning Disabilities, 1973, 6(3), 138-150.

Seven studies are reported in which precision teaching and using self-management techniques are utilized. A very interesting report, especially for teachers.

Mann, L. Perception training: misdirection and redirection. Journal of Orthopsychiatry, 1970, 40, 30-38.

A criticism of perception as related to academic performance. He states it is better to rely on educational therapeutic approaches than on isolated perceptual improvements.

Nelson, C.C., & Schmidt, L.J. The question of the efficacy of special classes. Exceptional Children, 1971, 37(5), 381-384.

The value of special classes is presented with an explanation of difficulties in the development of special education.

Ontario, Province of. Living and Learning--Report of the Provincial Committee on Aims and Objectives of Education in the Schools of Ontario. Toronto: Queen's Printer, 1968.

A report on the education facilities for Ontario, with recommendations for changes.

Owen, F.W., Adams, P.A., Forrest, T., Stolz, L.M., & Fisher, S. Learning Disorders in children: sibling studies. Monograph of the Society for Research in Child Development, 1971, 36(4).

A very interesting study whose purpose was to discover whether the characteristics of academically handicapped children could be more precisely identified and described, and to clarify the causes and familial patterns of learning disabled children. The results are of interest to educators, psychologists and parents.

Peter, L.J. Individualized Instruction: Prescriptive Teaching System. New York: McGraw Hill, 1972.

This book is especially good concerning teaching methods for student teachers, though it is an excellent reference book for all teachers. The system enables one to identify each educational objective and evaluate each student's attainment of each objective.

Peter, L.J. Prescriptive Teaching. New York: McGraw Hill, 1965.

An excellent book especially useful for a teacher whether in a special or regular class. A detailed explanation of prescriptive teaching and how to effectively use it is given.

Peter, L.J., & Wisely, F.G. The prescriptive teaching system: a teacher education program. Focus on Exceptional Children, 1971, 3(3), 1-8.

A very interesting article especially for teacher training programs.

Plowden, B. Children and their Primary Schools: A Report of the Central Advisory Council for Education, Vol. 1. London: Her Majesty's Stationery Office, 1967.

A very important book which discusses English primary schools. Recommendations on how to plan an effective school program, what qualifications teachers should have, and what they should teach, are presented.

Reger, R. Resource rooms: change agents or guardians of the status quo? Journal of Special Education, 1972, 6(4), 355-359.

An answer to Sabatino's article on resource rooms. Presents other specific points to consider in favor of resource room teachers.

Sabatino, D.A. An evaluation of research rooms for children with learning disabilities. Journal of Learning Disabilities, 1971, 4(2), 84-93.

A valuable article in terms of effectively using a resource room. Discussion of their value as a supplement to the regular classroom.

Sabatino, D.A. An evaluation of research rooms for children with learning disabilities. Journal of Learning Disabilities, 1971, 4(2), 84-93.

A valuable article in terms of effectively using a resource room. Discussion of their value as a supplement to the regular classroom.

Sabatino, D.A. Resource rooms: the renaissance in special education. Journal of Special Education, 1972, 6(4), 335-340.

The reasons behind, and ways of accomplishing, the implementation of resource rooms. A very interesting article, especially in terms of integration.

Sabatino, D. Revolution: viva resource rooms! Journal of Special Education, 1972, 6(4), 389-395.

In this article, Sabatino gives his rebuttal to the comments made by Hammill, Reger, Adelman, Heller, Ahutman, and Snapp regarding his first article on resource rooms.

Siegel, E. Task analysis and effective teaching. Journal of Learning Disabilities, 1972, 5(10), 5-12.

A very good explanation of task analysis using examples is presented. The information would be of interest to all teachers.

Siegel, E. Special education in the regular classroom. New York: John Day, 1969.

Children exhibiting behavioral or learning disorders are discussed in terms of educating them in the regular classroom. Basic ideas are given but it does not state any research where they were actually carried out.

Silberberg, N.E., & Silberberg, M.C. Myths in remedial education. Journal of Learning Disabilities, 1969, 2(4), 209-217.

A very important and interesting article regarding remedial reading and perceptual training. He warns that there are problems of validity in research regarding perception.

Silberberg, N.E., & Silberg, M.D. The bookless curriculum: an educational alternative. Journal of Learning Disabilities, 1969, 2(6), 302-307.

The authors suggest that every effort should be made to teach a child how to read but if they are unsuccessful then other means should be used to achieve general educational goals. A variety of materials are given.

Smith, R.M. Preparing competent special education teachers. Education Canada, 1969, 9, 31-36.

Spache, G.D. Reading Disability and Perception. Volume 1, Part 3. Proceedings of the Thirteenth Annual Convention of the International Reading Association, Boston, 1969.

A very interesting book that includes portions of the proceedings of the IRA convention held in 1968. Contained in the articles are discussions of definition, diagnostic procedures, and treatment of dyslexia.

Stephens, T.M. Directive Teaching of Children With Learning and Behavioral Handicaps. Columbus, Ohio: Merrill, 1970.

This book is especially edsigned for teachers, and presents ways in which to teach and manage children who have learning and behavioral problems.

Sullivan, J. Effects of Kephart's perceptual motor training on a reading clinic sample. Journal of Learning Disabilities 1972, 15, 545-551.

A study of interest to these involved with remedial reading. Kephart techniques were used with children with and without visual problems in grades four to twelve.

Tarnapol, L. Learning Disorders in Children. Boston: Little, Brown, 1971.

Discussions of various drugs and treatment for the learning disabled child. An especially good book for parents, teachers and doctors.

Towne, R.C., & Joiner, L.M. Some negative implications of special placement for children with learning disabilities. Journal of Special Education, 1968, 2, 217-222.

The social implications of placing a child in a special class are discussed. This study cautions that the simplicity of work a child is given may effect how a child perceives himself and thus affect learning in general.

United States Department of Health Education and Welfare, Minimal Brain Dysfunction in Children--Phase Two. Washington, D.C.: author, 1969.

This report outlines the program and resources which will have to be developed to provide for the needs of M B D or learning disabled children.

The educational and medical aspects are discussed. A very interesting document.

Valletutti, P. Integration vs. segregation: a useless dialectic. Journal of Special Education, 1969, 3(4), 405-408.

The retarded child is discussed in terms of integration into the regular classroom. Questions concerning teacher education for the integrated classroom are discussed.

Wasserman, E., Asch, H., & Snyder, E. A neglected aspect of learning disabilities: energy level output. Journal of Learning Disability, 1972, 5(3), 130-135.

A study of the energy level of children with learning disabilities. Though findings are incomplete there are suggestions as to the best approach to use with children with high and with low energy level output.

Waugh, K.W., Bush, W.J., & Kephart, N. Diagnosing Learning Disorders, Columbus, Ohio: Merrill, 1971.

This book presents various types of learning disorders, ways of diagnosis and methods for remediation. A very good source, especially for consultants.

Yates, J.R. Model for preparing regular classroom: teachers for mainstreaming. Exceptional Children, 1973, 39, 471-472.

The importance of preparing regular classroom teachers to effectively cope with physically handicapped children in the regular classroom is discussed.

Zedler, E. Educational programming for pupils with neurologically based language disorders. Journal of Learning Disabilities, 1970, 3(12), 19-29.

An interesting study of children with language learning disorders due to an organic defect caused by a neurological problem. The conclusions concerning individualized instruction as beneficial, and the negative effect of anticonvulsive medication in academic improvement are discussed.

Zedler, E. Management of reading in the educational program of pupils with neurologically based learning problems. In G.D. Spache, Reading Disability and Perception. Volume 1, Part 3. Proceedings of the Thirteenth Annual Convention of the International Reading Association, Boston, 1969.

(See annotation to Spache.)